

FIXED POINT DSP IMPLEMENTATION OF FM DEMODULATION AND DECODING

ABSTRACT

5 FM demodulation and decoding in a fixed point DSP is disclosed. The fixed point DSP must carry out division and arctan calculations for which there is no dedicated hardware. Division is normally achieved either by using the Newton-Raphson method or by using "conditional subtraction" instruction. Another and faster technique is to use a table look-up approach. However, in a table look-up, if the denominator value is very small, the size of the table look-up will be large. The present invention manipulates the in-phase representation of the denominator to overcome the table look-up problem by adding the integer two (2) to the value of $1/RL$ to obtain $1/RL+2$ to reduce the instruction cycle time. In addition, for decoding, the invention uses an efficient implementation of pilot frequency computation by choosing DFT snapshot value at 0° , 90° , 180° , 270° and 360° to reduce the number of multiplication steps.